CLAIMS

1.   An optical transmission device comprising:

a condenser which gathers signal light; and

5   a photonic crystal fiber which is connected to the condenser and includes a solid core which constitutes the center of the fiber and a cladding which surrounds the core and has a plurality of holes for transmitting the signal light from the condenser through the core, wherein

the holes of the cladding are sealed at an end portion of the photonic crystal fiber

10   connected to the condenser over a predetermined length L from an end face of the fiber and

the length L [μm] of the portion of the photonic crystal fiber at which the holes of the cladding are sealed is determined to meet the condition of

$$10 \leqq L \leqq (D+a) / 2\tan[\sin^{-1}(\sin\theta/n)]$$

wherein θ [°] is an incident angle of the signal light with respect to the photonic

15   crystal fiber, D [μm] is an outer diameter of the photonic crystal fiber, a [μm] is a diameter of the core of the photonic crystal fiber and n is a refractive index of the portion of the photonic crystal fiber at which the holes of the cladding are sealed.

2.   An optical transmission device comprising:

20   a light source which emits signal light; and

a photonic crystal fiber which is connected to the light source and includes a solid core which constitutes the center of the fiber and a cladding which surrounds the core and has a plurality of holes for transmitting the signal light from the condenser through the core, wherein

25   the holes of the cladding are sealed at an end portion of the photonic crystal fiber connected to the light source and

the length L [μm] of the portion of the photonic crystal fiber at which the holes of

the cladding are sealed is determined to meet the condition of

$$10 \leq L \leq (a/2 - d \cdot \tan\theta) / \tan[\sin^{-1}(\sin\theta/n)]$$

wherein θ [°] is an incident angle of the signal light from the light source with respect to the photonic crystal fiber, d [µm] is a distance between the light source and the end face of the fiber, a [µm] is a diameter of the core of the photonic crystal fiber and n is a refractive index of the portion of the photonic crystal fiber at which the holes after the cladding are sealed.